

The Impact of Cooperative Learning Strategies on the Development of Students' Critical Thinking Skills in History: The Case of Secondary and High Schools in the Buea Municipality

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ABSTRACT

The main purpose of this study was to examine the extent to which cooperative learning strategies develop students' critical thinking skills in History in some Secondary and High Schools in Buea Municipality. More specifically, it was aimed at looking for answers to the following three research questions: How can Student Team Achievement Division Technique improves students' critical thinking skills in History? How can the Jigsaw Technique develops students' critical thinking skills in History? How can Group Investigation Technique develop students' critical thinking skills in History? The study employed mixed methods in the research design using quantitative and qualitative approaches. Quantitative data were collected through a record sheet; group discussions and an unstructured questionnaire constituted the strategy used to collect qualitative data. Questionnaires were completed by ten teachers drawn from the two Secondary and High Schools in Buea Municipality. 150 students also filled the questionnaires. Descriptive and inferential statistics were used to analyze the quantitative data while qualitative data were analyzed using content analysis. This finding revealed that Student Team Achievement Division Technique improves students' critical thinking skills in History. The experimental group significantly performed better than the control group. The findings also revealed that the Jigsaw technique eases learning, creates room for better understanding, facilitates the exposure to ideas as they could be acquired from peers, encourages hard work, high team spirit, encourages further research and improves performance. The findings also revealed that the group investigation technique improves students' performance in History. Some barriers to cooperative learning strategies were identified such as the constant evolution of cooperative learning as a threat due to the fact that cooperative learning is constantly changing; there is the possibility that teachers may become confused and lack complete understanding of the method. Teachers implementing cooperative learning strategies may face resistance and hostility from students who believe that they are being held back by their slower teammates or by students who are less confident and feel that they are being ignored or demeaned by their team. The teachers proposed some strategies to address the identified barriers. One major recommendation is that as the teachers continue to use this method, they become more experienced and can easily adapt to its changing trend.

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KEYWORDS: Cooperative learning; Student; History; Secondary; School; Team Achievement Division Technique; Jigsaw Technique; Group Investigation Technique

INTRODUCTION

One of the fundamental goals of education is to equip students with knowledge and skills necessary to think critically, solve complex problems, and succeed in the 21st century society and economy. These skills are not limited to any specific discipline but are required in all disciplines. The teaching of History therefore is aimed at developing specific cognitive skills that are very essential for the lively survival of the discipline. Several studies as cited by Savich (2009) point out that, History is considered worthless and useless because of the emphasis on memorizing dry, and dead facts and there is no “enduring understanding”, no analytical or critical reflection, evaluation, or long-term synthesis (Foster & Padgett, 1999; Goodlad, 1984; Loewen, 1995; Schug, Todd, & Beery, 1984; Schug, Todd, & Beery, 1984; Shaughnessy & Haladyna, 1985; Shaver, Davis, & Helburn, 1979). Learning environments should be those which enable learners to be actively involved in learning tasks with each other. Cooperative learning offers a proven and practical means of creating exciting social and conducive classroom environment for learners. Research has shown that cooperative learning techniques are necessary for cognitive advancement (Lai, 2011).

Cooperative learning is learning among students who work together in groups and encouraging positive interdependence. Such a practice helps learners to develop the spirit of responsibility for their own learning and active participation in solving problems. The quality of interaction during cooperative learning encourages students' level of thinking. This approach is hardly being practiced in most History classrooms in Cameroon. Knowledge is being transmitted in a lecture form and it does not give opportunity for children to process the knowledge acquired in a critical way. This has made the learning of History very passive and children grow up missing the necessary critical quality for functioning in a democratic society. When children work in small groups, exchange ideas, correct each other, learn new things in different ways, learn how to present facts and organize them, and experience a lively History lesson through interactions, both the weaker and fast learners will gain from each other. With appropriate guidance from school counselors and classroom teachers, learners will gain experience in addressing historical facts from an active position.

This study examines the influence of different cooperative learning strategies and their influence on critical thinking skills in the Cameroon History classroom at the level of the secondary.

Theoretical background

Lai (2011) sees critical thinking as including the component skills of analysing arguments, making inferences using inductive or deductive reasoning, judging or evaluating, and making decisions or solving problems. In addition, critical thinking involves both cognitive skills and dispositions (fair-mindedness, inquisitiveness, flexibility, a propensity to seek reason, a desire to be well informed, and a respect for and willingness to entertain diverse viewpoints). Critical thinking has been defined throughout history from different points of view. These viewpoints include; the philosophical traditional views, cognitive psychologist's view, educational view, and common viewpoints. Some of the definitions outlined by Lai (2011) from his understanding are hereunder examined in the following order:

Critical Thinking from the Philosophical tradition:

- Reflective and reasonable thinking that is focused on deciding what to believe or do (Ennis, 1985, p. 45).
- Purposeful, self-regulatory judgment which results in interpretation, analysis, evaluation, and inference, as well as explanation of the evidential, conceptual, methodological, criteriological, or conceptual considerations upon which judgment is based (Facione, 1990, p. 3).
- Judging in a reflective way what to do or what to believe (Facione, 2000, p. 61).

Critical thinking from a cognitive psychologist's perspective:

- The mental processes, strategies, and representations which people use to solve problems, make decisions, and learn new concepts (Sternberg, 1986, p.3).
- The use of those cognitive skills or strategies that increase the probability of a desirable outcome (Halpern, 1998, p. 450).
- Seeing both sides of an issue, being open to new evidence that disconfirms your ideas, reasoning dispassionately, demanding that claims be backed by evidence, deducing and inferring conclusions from available facts, solving problems, and so forth (Willingham, 2007, p.8).

Critical thinking from an educational perspective:

The Bloom's taxonomy (2010) presents a very clear explanation on the constituents of critical thinking. It presents the processing of information at different layers of thinking; knowledge, comprehension, application, analysis, synthesis and evaluation. When historical knowledge is presented, there is demand for

comprehension, and then application to real life situation. Learners are expected to analyze these historical facts, drawing conclusion by analyzing information from different angles and then make valued judgment of the processing of this historical facts.

Common ground definition researchers of critical thinking typically agree on the following:

- Analyzing arguments, claims, or evidence (Ennis, 1985; Facione, 1990; Halpern, 1998; Paul, 1992)
- Making inferences using inductive or deductive reasoning (Ennis, 1985; Facione, 1990; Paul, 1992; Willingham, 2007)
- Judging or evaluating (case, 2005; Ennis, 1985; Facione, 1990; Lipman, 1988; Tindal & Nolet, 1995) and
- Making decisions or solving problems (Ennis, 1985; Halpern, 1998; Willingham, 2007).

Many researchers working on critical thinking lament the poor state of the concept in most educated adults and children. Halpern (1998) points to research from the field of psychology, concluding that many, if not most, adults fail to think critically in many situations. Van Gelder (2005) has likewise concluded that many adults lack basic reasoning skills. One reason for the gap in critical thinking may be deficient educational experiences. Halpern warns that we should not expect to see dramatic improvements in critical thinking over time as a result of instructional interventions. Improvements in critical thinking, when they do occur, are slow and incremental.

Piagetian thinking sees young children as being incapable of formal operations (abstract reasoning), which are required for critical thought. Researchers have found out that young children engaged in many of the cognitive processes that adults do, equally have a place for critical thinking in lower elementary curriculum.

Silver (2008) argued that, there is no single age when children are developmentally ready to learn more complex ways of thinking. Willingham (2007) indicates that very young children have been observed thinking critically, whereas trained scientists occasionally fall prey to errors in reasoning.

Johnson (1975) postulates that, cooperative learning promotes mutual living, better communication, high acceptance and support, as well as demonstrate an increase in a variety of thinking skills. Johnson & Johnson (1994) listed five elements essential for effective group learning which include positive interdependence, individual accountability and face-to-face interaction, social skills and processing. In

addition, they outline some of the necessary skills acquired as a result of working in groups; problem solving, reasoning, decision making, planning, organizing and reflecting skills.

Cooperative learning (CL) refers to students working in teams on an assignment or project under conditions in which certain criteria are satisfied, including that the team members be held individually accountable for the complete content of the assignment or project.

Cooperative learning is an approach to group work that minimizes the occurrence of those unpleasant situations and maximizes the learning and satisfaction that result from working on a high-performance team. There are several reasons why cooperative learning works as well as it does. The idea that students learn more by doing something active than by simply watching and listening has long been known to both cognitive psychologists and effective teachers and cooperative learning is by its nature an active method. Beyond that, cooperation enhances learning in several ways. Weak students working individually are likely to give up when they get stuck; working cooperatively, they keep going. Strong students faced with the task of explaining and clarifying material to weaker students often find gaps in their own understanding and fill them in. Students working alone may tend to delay completing assignments or skip them altogether, but when they know that others are counting on them, they are motivated to do the work in a timely manner. According to Walters (2000) as cited by Woods & Chen (2010), there are four cooperative learning models:

- Student Team Learning (STL) – this is a model in which teams of students earn rewards if they improve their scores. Students also earn rewards for improving members of the team's scores in general. Under Student Team Learning we have Student Team Achievement Division (STAD); here students are assigned to four members learning teams mixed in performance level, sex and ethnicity. The teacher presents a lesson, and the student work within their teams to make sure that all team members have mastered the lesson. Finally, all students take individual quizzes on the material, at which time they may not help one another. Students quiz scores are compared to their own past averages, and points are awarded based on the degree to which students meet or exceed their own earlier performances. These points are then summed to form team scores, and teams that meet certain criteria earn certificates or other rewards. The whole cycle of activities, from teacher presentation to team practice to quiz, usually takes three to five class period.

- Jigsaw (1971); this is a model in which students are formed into groups with individual students learning one segment of the material, which they then teach to the other students in the group. One student “expert” from each team also meet to discuss the material and to help each other formulate effective teaching techniques.
- Group Investigation; in this model, students form their own two- to six-person teams, team selects subtopics from a class-wide unit of instruction, and teams of students develop group reports based on that subtopic.

The proven benefits of cooperative learning notwithstanding, instructors who attempt it frequently encounter resistance and sometimes open hostility from the students. Bright students complain about being held back by their slower teammates; weak or unassertive students complain about being discounted or ignored in group sessions; and resentments build when some team members fail to pull their weight. Knowledgeable and patient instructors find ways to deal with these problems, but others become discouraged and revert to the traditional teacher-centered instructional paradigm, which is a loss both for them and for their students.

Several definitions of cooperative learning have been formulated. The one most widely used in higher education is probably that of David and Roger Johnson of the University of Minnesota. According to the Johnson & Johnson model, cooperative learning is instruction that involves students working in teams to accomplish a common goal, under conditions that include the following elements (characteristics):

- Positive interdependence. Team members are obliged to rely on one another to achieve the goal. If any team members fail to do their part, everyone suffers consequences.
- Individual accountability. All students in a group are held accountable for doing their share of the work and for mastery of all of the material to be learned.
- Face-to-face promotive interaction; Although some of the group work may be parceled out and done individually, some must be done interactively, with group members providing one another with feedback, challenging reasoning and conclusions, and perhaps most importantly, teaching and encouraging one another.
- Appropriate use of collaborative skills; Students are encouraged and helped to develop and practice trust-building, leadership, decision-making, communication, and conflict management skills.

- Group processing; Team members set group goals, periodically assess what they are doing well as a team, and identify changes they will make to function more effectively in the future. Cooperative learning is not simply a synonym for students working in groups. A learning exercise only qualifies as cooperative learning to the extent that the five listed elements are present.

Statement of the Problem

The teaching of History in Cameroon Secondary schools has so many flaws. There is a problem in helping the individual learner in gaining competent cognitive skills necessary to add value to learning. Emphasis on the teaching of History is on the content and not on the process. Teachers present facts as they get them from the textbooks without giving students the opportunity to analyze, synthesis and evaluate these facts. Thus students memorized historical facts and dates through rote memorization for the purpose of using them during assessment. As a result of this, the absence of critical thinking in the scrutiny of facts becomes problematic especially when attempting to process historical facts or information.

Tchombe (2009) asserts that, some of the values of teaching History are moral, powers of enriching reflective and imaginative minds; this is because History collects and organizes facts, providing them with a framework which requires a critical and analytical mind to work on them. With this values missing in the teaching of History in secondary schools in Cameroon, learners will as well fail to develop the necessary critical and analytical mind, hence the need for investigations.

Cooperative learning has been proven through research as an instructional strategy in developing students critical thinking skills considering the rich nature of social interaction. However, most of these studies use different instructional methods alongside cooperative learning strategy in relation to critical thinking skills. There are limited studies which examines the different cooperative learning strategies and their influence on critical thinking skills in History. The different cooperative learning strategies have different structures and organizations; this may affect the outcome for thinking in different ways. It therefore becomes imperative to evaluate how the different cooperative learning strategies develops critical thinking skills in History.

General Objective

How does cooperative learning strategies develop students' critical thinking skills in History?

Specific Objectives

Specifically, this study is set in;

1. To investigate how Student Team Achievement Division Technique (STADT) improves students' critical thinking skills in History.
2. To investigate how the Jigsaw Technique (JT) develops students' critical thinking skills in History.
3. To find out how Group Investigation Technique (GIT) develops students' critical thinking skills in History.

Hypotheses

General Hypothesis:

Cooperative learning strategies such as Student Team Achievement Division, Jigsaw and Group Investigation Techniques do not improve students' critical thinking skills in History.

Significance of the Study

The findings of this study will be useful to stakeholders notably students, teachers, policy makers, parents and educational psychologists.

➤ To Students;

Cooperative learning allows the students to explain their reasoning and collusions, it helps develops oral communication skills in students.

By following the appropriate structuring of cooperative learning, students are able to develop and practice skills that will be needed to function in society and the workplace. These skills include; leadership, decision making, trust building, and conflict management.

The cooperative environment also develops a social support system for students. Other school staff and potential parents becomes integral part of the learning process, thus supplying multiple opportunities for support to the students (Kessier and Macleod, 1985).

Students also benefit psychologically. Johnson and Johnson (1989) claim that cooperative learning experiences promote more positive attitudes towards learning and instruction than other teaching methods. Students play an active role in the learning process in cooperative student satisfaction with the learning experience is enhanced.

Students also tend to be inspired by instructors who take time to plan activities which promotes an encouraging environment (Janker, 1980). Receiving encouragement in a cooperative setting from both the instructors and peers helps to develop higher self. As a result of higher self-efficacy, students' grade tends to increase.

It requires students to verbalize their ideas to the group which helps them to develop clearer concepts. Thus the whole process becomes fully embedded in

the student memory. Vygotsky supports these concepts in his research on egocentric speech by claiming that verbalization plays a significant role in task solution (Bershon, 1992). There is more potential for success when students work in group. Individuals tend to give up when they get stuck, whereas a group of students is more likely to fine away to keep going (Johnson and Johnson 1990).

Cooperative learning calls for self- management from students because they must come prepared with complete assignments and they must understand the material which they have compiled. As a result, a more complete understanding of the material is developed.

➤ To Teachers;

Cooperative learning provides instant feedback to teachers because the effectiveness of each class can be observed as the teacher move around the class room and observe each group of student interacting and explaining their theories, the teacher is able to detect misconception early enough to correct them.

Grades are not dependent solely on tests and individual assignment which only allow for right or wrong response, leaving little no room for reflection and discussion of error or misconceptions. With cooperative learning, instructors can use more authentic assessment such as observation, peer assessment and writing reflections. It seeks to transform the role of the teacher as a facilitator of learning.

➤ To Policy Makers

In a bid to develop policies affecting education, policy maker should adopt policies that include cooperative learning because schools utilizing this strategy report in increase in students attendance because students feels that they are valuable and necessarily part of their groups (McBrien and Brandt, 1997).

Students are less likely to act out in a cooperative setting. Students act out to gain attention however, the stage is removed in a cooperative environment because it is very difficult to gain the attention of the entire class when students are divided into smaller groups (Van Sickle, 1992), more likely to stay on task and are less likely to be disrupted.

Cooperative learning enables students to socialize during the learning process. Policy makers must bear in mind that for effective integration of students from different cultural backgrounds, cooperative learning is the best teaching method suitable for that because students are allowed to socialize during the learning process. Students need peer interaction, and without

the integration of interaction among students, the need for social contact emerges in a negative context.

Policy makers should also bear in mind that cooperative learning leads to reduction of violence. According to Johnson and Johnson (1990), cooperative learning also helps to reduce violence. If enforced correctly, cooperative activities model non-violent resolutions to problems. Because group consensus is promoted, blame is eliminated, and honor, friendliness and equality are promoted.

Policy makers should bear in mind that cooperative learning encourages diversity among students. It encourages students to use their differences to help each other. Because students are placed in a situation where they are able to interact with peers that they otherwise may never socialize with. As students observe each other's reasoning processes, there is more room to understand and appreciate their differences, (Johnson and Johnson 1990). As a result, a deeper understanding of cultural and individual differences is developed (Yager 1985). Also because students are placed in a supportive environment where group processing skills are essential, they are more likely to accept these differences than they would in a competitive, non-interactive environment.

Policy makers should bear in mind that cooperative learning involves students with special needs. Cooperative methods are flexible and can easily be adapted for students.

With special needs, this type of learning environment allows for improved social acceptance of main streams students with learning disabilities (Slaving, 1990).

Policy makers can also use cooperative learning for conflict resolution. Marzano (1992) asserts that in a cooperative setting, students can analyze the effects of the groups and suggest activities which will promotes positive interaction or deal with conflict or personality problems within which to manage conflict resolution (Johnson and Johnson, 1990). It can be seen as tool through which teaching can be more focused on learning outcomes, as students work together.

➤ To parents

It improves their children's performance; students who usually struggle in academics, are able to learn to prepare for test, check and correct homework, and see alternative solutions to problems. Vygotsky (1978) hypothesizes that the social interaction among students extends the students zone of proximal development. When students work cooperatively in groups, the more knowledgeable they are able to help the less knowledgeable ones understand new

concepts. High achieving students also benefits because they are verbalizing their ideas and actually teaching others. The process of verbalizing thoughts helps to further promotes understanding of material.

Parents will begin to realize that their children have embraced different learning styles such as kinesthetic, auditory and visual. Students working together, use kinesthetic abilities by working with hands on-activities. Discussing issues within the groups further enhances verbal skills and class presentation of group findings helps to reinforce visual and auditory skills (Midkiff and Thomason, 1993).

➤ To Educational Psychologists

Information processing theorists point to the value of group discussion in help in participants rehearse, elaborate and expand their knowledge, make connections and review all process that support information processing and memory. Advocates of the Piagetian perspective suggest that the interactions in groups can create the cognitive conflict and disequilibrium that leads an individual to quest his or her understanding and try out new ideas.

Constructivists who favor Vygotsky's theory suggest that social interaction is important for learning because higher mental functions such as reasoning, comprehension and critical thinking originate in social interactions and are then internalized by individual children who can accomplish mental task with social support before they can do them alone. Thus cooperative learning provides the social support and scaffolding that student need to move learning forward (Woolfolk, 2001).

Vygotsky also propounded that, children learn through joint interactions with adults and more capable peers. On cooperative projects, children are exposed to their peers thinking process; this method not only makes the outcome available to all students, but also makes other students thinking processes available to all. Vygotsky noted that successful problems solve talk themselves through different problems. In cooperative groups, children can hear this inner speech out loud and can learn how successful problem solvers are thinking through their approaches.

Cooperative learning promotes mutual liking, better communication, high acceptance and support, as well as demonstrates an increase in a variety of thinking strategies among individuals in the group (Gilles and Adrian, 2003).

Scope and delimitations

Cameroon operates two major systems of education (English and French sub-systems and a less dominant Arabic sub-system). The secondary education sector

is made up of public and private schools. Furthermore, the private schools are broken down into denominational and lay private sectors. This study covers only public and denominational schools of the English-speaking sub-system in the Buea Municipality.

In relation to the issues of discussion, this study is limited to the investigation of how cooperative learning strategies develop students' critical thinking skills in History. While there are many cooperative learning strategies associated with learning, this study focuses its investigation on only three cooperative learning strategies which include: Student Team Achievement Division (STAD) techniques, Jigsaw and group investigation techniques. In addition this study falls in the area of cooperative learning and cognitive psychology. The study was limited to form four and Lower sixth students' in some selected schools in the Buea Municipality. The study makes use of a quasi-experimental design thus delimiting it to dominantly a quantitative research approach.

Operational definition of terms

This section presents definitions of some main terms used in this study.

Cooperative Learning; In this study, cooperative learning is defined as the placement of students into small groups in which each individual is given a task to prepare in order to come out with the groups presentation. Group members help one another to master the group task.

Students Team Achievement Division Technique (STAD); In this study, Student Team Achievement Division is defined as organization into groups of four

members each, where the teacher presents a lesson and students work within their team making sure that all team members have mastered the lesson and are able to write test on the team task.

JIGSAW; In this study, the jigsaw technique is defined as the organization of students into groups of six members to work on a topic that has been broken down into sub-topics and members of different groups who have studied the same sub-topic meet to discuss their sections and go back to their team and explain to their team mate the groups' task.

Group Investigation; In this study, Group Investigation technique is defined as the formation of groups by students' constituting four members who choose a sub-topics from the class task and further break it into individual task and then prepare a group report to be presented to the entire class.

Critical thinking; in this study critical thinking is defined as the possibility of students to be able to apply, analyze, synthesize, and evaluate history facts and events.

Also, critical thinking in History in this study is seen as the ability to analyze synthesis, evaluate and apply historical knowledge.

Development; It refers to the process of change, the process of changing and becoming larger, stronger, or more impressive, successful, or advanced. In this context, it refers to the act of acquiring skills such as cognitive skills in the learning process.

Strategy; It refers to the methods or techniques adopted by teachers in transferring their lessons to the learners.

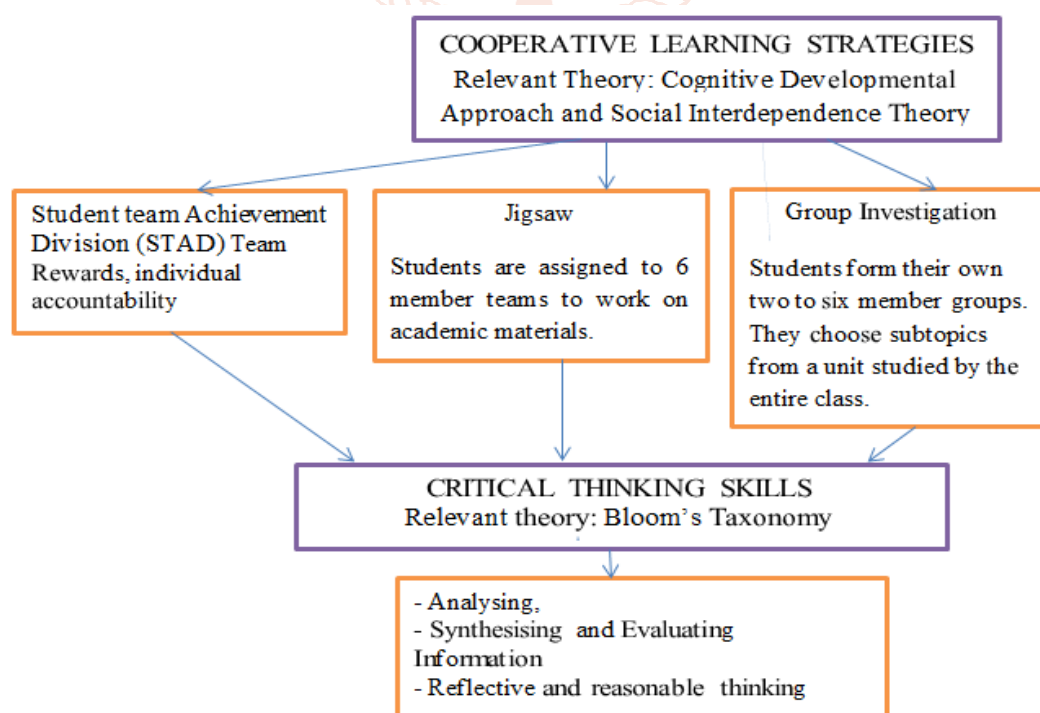


Figure 1: Conceptual framework

Methodology

Research Design

A research design according to Nworgu (1991) is a plan or blue prints which specify how data relating to a given problem should be collected and analyzed. It provides the procedural outline for the conduction of any given investigation. The aim of this study is to evaluate the impact of cooperative learning strategies in the development of student's critical thinking skills in History. The study employed an evaluation design. The type of evaluation design here is the quasi-experimental design, and more specifically, the Post-test-only control group design. The Post-test-Only Control Group design lacks a pretest and you can only measure the difference in outcomes between the intervention and control groups.

Area of Study

The research site for this study is the Buea Municipality in Fako division in the South West Region of Cameroon. Fako Division is located on the slopes of Mount Cameroon. The municipality is host to the major city Buea, which, is one of the fastest growing towns in Cameroon today with a mixed cosmopolitan setting. English and French are the two official languages used for general interaction while pidgin is the lingua franca. The Bakweri language spoken by the natives is equally written and documented.

Table 1: Student Population of the Study area 2015/2016

Schools	Number of schools	Population of girls	Population of boys	Total population
Government Secondary school	13	9859	8293	18152
Denominational schools	08	1324	2253	3577
Lay private schools	19	2202	1430	3633
Total	40	13385	11976	25362

Source: Regional delegation of secondary education (2015/2016 statistics).

Table 2: Experimental layout

Research hypotheses	Experimental group	Control group	Experimental setting	Selection methods	Scoring method	Measurement level of variable	Data processing and analysis
Student team Achievement Division (STAD) technique does not improve student critical thinking skills in History	The researcher first of all presents the lesson on a given topic. The students are asked to work in their groups on the topic presented making sure that each member of the group masters the lesson. Five groups will be created. All students take individual quiz on the topic and are evaluated individually.	What makes the difference here is the group work. The researcher first of all presents the lesson on a given topic. The 25 sampled students are asked to work on the topic presented individually making sure that they master the lesson. They will later take individual quiz on the	The lesson is presented to all the students put together before some of them are later on sampled at random and distributed in the control and experimental group. The experimental group is followed up to make sure that the group's members are always present and participating, and meet	For the experimental group, students are selected at random. For the control group, students are selected at random as well. There will be 25 (5 in each of the 5 groups) students in the experimental group and 25 in the control group. Each group shall have at least two	Standard classroom assessment and marking on a scale of 20.	Scale/continuous	The score of the 25 students of the experimental group are compared with that of the 25 students of the control group. The group's scores will be screened for normality using Kolmogorov-Smirnov and Shapiro-Wilk test for normality. If the normality assumption is not violated, the parametric

		topic and will be evaluated individually .	four times over the two terms duration of the experiment.	males or two females, at least two high achievers or two low achievers distributed between male and female.			Independent-Sample test will be used to compare groups for significant difference. In the opposite, the non-parametric Mann-Whitney U test will be used.
The Jigsaw technique does not develop student critical thinking skills in History	A topic will be broken down into 5 sub-topics and each of the five sub-topics given to five different groups. Each group will work on its topic, one member of each group will act as an expert and all the five groups' experts will meet and discuss their various topics and go back to their groups and explain it to their group members. At the end the research/teacher will set an exam or quiz test and each group member will be evaluated individually. A topic will be broken down into five sub-topics and each of the five sub-topics	What makes the difference here is the jigsaw. Therefore the same approach as in the experimental group will be followed, but the groups will not be experts that will meet to discuss or brainstorm.	The lesson is presented to all the students put together before some of them are sampled at random and distributed in the control and experimental group. Both the experimental group and the control groups are followed up to make sure that the group's members are always present and participating, and meet four times over the two terms duration of the experiment.	For the experimental group, students are selected at random. For the control group, students are selected at random as well. There will be five students in each of the five work groups of the experimental group and five students in each of the five work groups of the control group. Each group shall have at least two males or two females, at least two high achievers or two low achievers distributed	Standard classroom assessment and marking on a scale of 20.	Scale/continuous	The score of the 25 students of the experimental group are compared with that of the 25 students of the control group. The group's scores will be screened for normality using Kolmogorov-Smirnov and Shapiro-Wilk test for normality. If the normality assumption is not violated, the parametric Independent-Sample test will be used to compare groups for significant difference. In the opposite, the non-parametric Mann-Whitney U test will be used.

	is given to five different groups. Within			between male and female.			
The Group Investigation technique (GIT) does not develop student critical thinking skills in History	groups now, the topic is broken down into individual task but at the end, the product is presented as a group work or group report to the teacher.	A topic will be broken down into five sub-topics and each of the five sub-topics is given to five different groups. The different here is that within groups now, the topic is not broken down into individual task, they work on the topic as a whole but at the end, the product is presented as a group work or group report to the teacher.	The lesson is presented to all the students put together before some of them are later on sampled at random and distributed in the control and experimental group. Both the experimental group and the control groups are followed up to make sure that the group's members are always present and participating, and meet four times over the two terms duration of the experiment.	For the experimental group, students are selected at random. For the control group, students are selected at random as well. There will be five students in each of the five work groups of the experimental group and five students in each of the five work groups of the control group. Each group shall have at least two males or two females, at least two high achievers or two low achievers distributed between male and female.	Standard classroom assessment and marking on a scale of 20.	Scale/continuous	Cohen's <i>d</i> will be used to compare groups for significant difference. Here with have to compare the five scores from the experimental group with the five scores from the control group. The nominal sample size justifies the use of this statistical test.

Data Collection Instrument

The instruments designed for data collection was a record sheet on which students' records were recorded after marking and an unstructured questionnaire to gather opinions.

Sampling techniques and sample

The schools were sampled using simple random sampling and distributed to the control and experimental group using the same approach. The name of the schools were written on pieces of papers, put in a cup, shuffled and then drawing followed. This process was repeated for the second school. Students as explained in the

experimental layout table were sampled and distributed to groups at random as well. Pieces of paper on which it was written 'yes' and 'no' were distributed to them, stratifying as explained on the experimental layout table (table 2). The number of pieces of paper carrying 'yes' matched the number to be sampled. Any student that drew the piece of paper carrying 'yes' was included in the study. The study was conducted in Baptist High School Great Soppo and BGS Molyko. Form four was used in the two schools and the three experiment types were distributed at random to the two schools. The same experiment was conducted separately with lower sixth students.

Table 3: Table showing sample distribution for the study

School	Population	Students			Teachers		
		Sample					
		Form 4	Lower sixth	Total	Form 4	Lower sixth	Total
Baptist High School Great Soppo	473	25	25	50	5	5	10
BGS Molyko	3465	25	25	50	5	5	10
02	3938	50	50	100	10	10	20

Validity and Reliability of Instrument

Construct validity was checked by ensuring that the measures under investigation relate with one another in a way that is consistent with theoretically derived hypothesis.

To ensure content validity, the questionnaire was checked by the researcher, his supervisor, a colleague (teacher trainer) and the statistician to make sure the indicators were adequately labeled and could appropriately measure the characters under study. Generally, above 0.75, CVI is satisfactory (Nana, 2018) and in the context of this study, the supervisor and the statistician validated the final instrument making a CVI of 1.

The reliability of the questionnaire was measured using the estimate of internal consistency or internal reliability. To ensure high reliability of the instrument, the Cronbach's Coefficient Alpha (α) which is the most appropriate reliability test to use when items are not dichotomously scored was used. The internal consistency assumption was not violated with a reliability coefficient of 0.816.

Data collection process

An authorization to carry out the study was obtained from the Faculty of Education of the University of Buea. This authorization was presented to the heads of institution for administrative clearance. Participants were then briefed on the objective of the study, their consent sought, and they were then involved.

Method of data processing and analysis

Quantitative data was entered using EpiData Version 3.1 (EpiData Association, Odense Denmark, 2008) and analyzed using the Statistical Package for Social Sciences (SPSS) Standard version, Release 21.0 (IBM Inc. 2012).

Descriptive statistics

The variables were essentially scale and were described using mean, median, minimum, maximum, standard deviation and the standard error of mean.

Test of hypotheses

Test of normality

The test of normality was used to assess whether the variables follow a normal distribution or not as to choose the appropriate test for analysis. In this line, Kolmogorov-Smirnov and Shapiro-Wilk test for normality were used concurrently to test the normality assumption. These two tests using the measures of central tendencies and dispersion assume a theoretical normal distribution for the data and plot the real distribution against this theoretically assumed normal distribution. A non-significant asymptotic significant (P-value > 0.05) is expected for the distribution of a variable to be assumed not deviating significantly from the theoretical assumed normal model. In the other sense, the real distribution shall not deviate significantly from the theoretically assumed normal distribution that logically follows the Gaussian shape.

Table 4: Test of normality

Variables	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Student Team Achievement Division technique	.205	20	.028	.882	20	.019
The Jigsaw technique	.198	20	.058	.862	20	.059
Group Investigation Technique (GIT)	.128	20	.200	.952	20	.399

In the context of this study, the normality assumption was not violated for two variables out of three ($P > 0.05$), they are the Jigsaw technique and the Group Investigation Technique (GIT). As for the Student Team Achievement Division technique, though the normality assumption was violated, it was not really very critical with P-value of 0.028 according to Kolmogorov-Smirnov. The parametric Independent-Samples t test was then used to compare groups for significant difference. A cut point of 10 was then set, as to classify students as less than average or average and above.

Findings

Demographic Characteristics

Table 5: Distribution of students with respect to gender and class for the experimental study

Gender	n	%	Class	n	%
Male	50	50%	Form 4	50	50%
Female	50	50%	Lower Sixth	50	50%
Total	100	100%	Total	100	100%

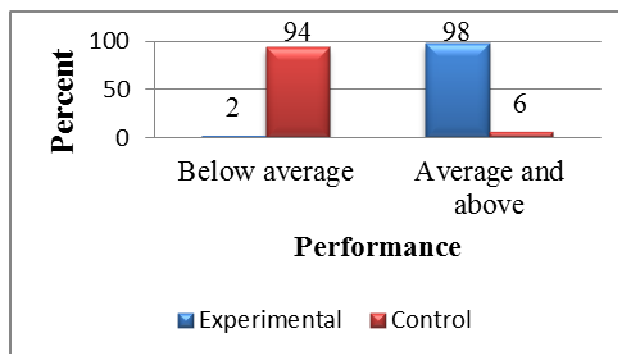
For this experimental study we had equal number of male and female and the same number of students sampled in Form 4 and Lower Sixth, 50 in each of the category to make a total of 100 students that were involved in the experimental study. They were equally shared in both the experimental and the control group while respecting parity for gender and class.

Research question one: How can Student Team Achievement Division Technique (STADT) improve students' critical thinking skills in History?

Table 6: Description of students' scores with respect to Team Achievement Division Technique (STADT)

Group	Class	N	Mean	SEM	SD
Experi-mental	Form 4	25	13.20	.424	2.121
	Lower Sixth	25	13.40	.337	1.683
	Total	50	13.30	.268	1.898
Control	Form 4	25	5.32	.373	1.865
	Lower Sixth	25	4.84	.682	3.412
	Total	50	5.08	.386	2.732

As for Form Four students, in the experimental group, the average score was 13.20, higher than the 5.32 of the control group. As for Lower Sixth students, in the experimental group, the average score was 13.40, higher than the 4.84 of the control group. As for the overall score, the average was 13.30 for the experimental group, higher than the 5.08 of the control group.



Cramer's V: $V = 0.921$; $P = 0.000$.

Figure 2: Comparing performance in Team Achievement Division Technique between control and experimental group

Using average as cut point, it appeared that the experimental group significantly ($P=0.000$) performed better than the control group, with proportion of those that performed average or above of 98.0% (49) as against 6.0% (3) for the control group.

Research hypothesis one: Student Team Achievement Division Technique (STADT) does not improve students' critical thinking skills in History

Table 7: Comparing scores in Team Achievement Division Technique between control and experimental group

Group	N	Mean	Median	SEM	SD
Experimental	50	13.30	13.00	.268	1.898
Control	50	5.08	4.00	.386	2.732

IST: $t=17.474$; $P=0.000$

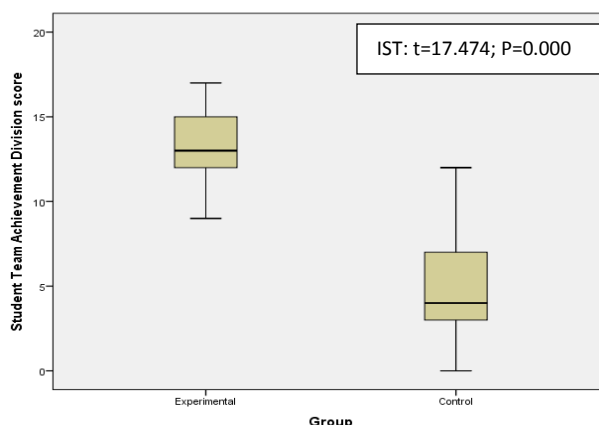


Figure 3: Boxplot comparing scores in Team Achievement Division Technique between control and experimental group

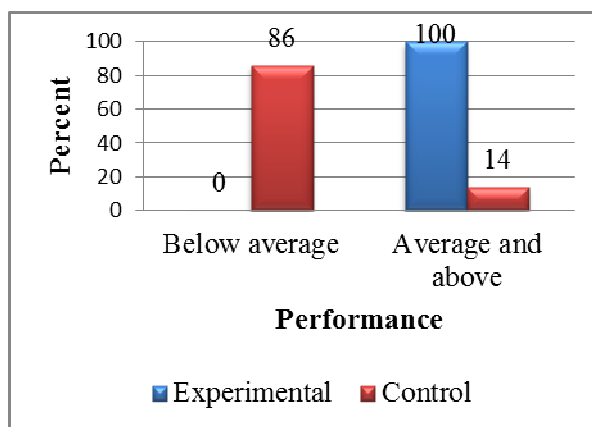
The average score in the experimental group was 13.30, significantly higher than the 5.08 obtained in the control group (IST: $P=0.000$). The hypothesis here stated is then rejected, thus implying that the Jigsaw Technique significantly improves students' performance in History.

Research question two: How can the Jigsaw technique develop students' critical thinking skills in History?

Table 8: Description of students' scores with respect to Jigsaw technique

Group	Class	N	Mean	SEM	SD
Experimental	Form 4	25	13.48	.392	1.960
	Lower Sixth	25	13.48	.342	1.711
	Total	50	13.48	.258	1.821
Control	Form 4	25	5.28	.381	1.904
	Lower Sixth	25	7.32	.632	3.159
	Total	50	6.30	.393	2.779
Total	Form 4	50	9.38	.645	4.562
	Lower Sixth	50	10.40	.566	4.000
	Total	100	9.89	.430	4.299

As for Form Four students, in the experimental group, the average score was 13.48, higher than the 5.28 of the control group. As for Lower Sixth students, in the experimental group, the average score was 13.48, higher than the 7.32 of the control group. As for the overall score, the average was 13.48 for the experimental group, higher than the 6.30 of the control group.



Cramer's V: $V=0.869$; $P=0.000$.

Figure 1: Comparing performance in Jigsaw Technique between control and experimental group

Using average as cut point, it appeared that the experimental group significantly ($P=0.000$) performed better than the control group, with proportion of those that performed average or above of 100% (100) as against 14.0% (7) for the control group.

Research hypothesis two: The Jigsaw technique does not develop students' critical thinking skills in History.

Table 9: Comparing scores in Jigsaw Technique between experimental and control group

Group	N	Mean	Median	SEM	SD
Experimental	50	13.48	13.00	.258	1.821
Control	50	6.30	6.00	.393	2.779

IST: $t=15.280$; $P=0.000$

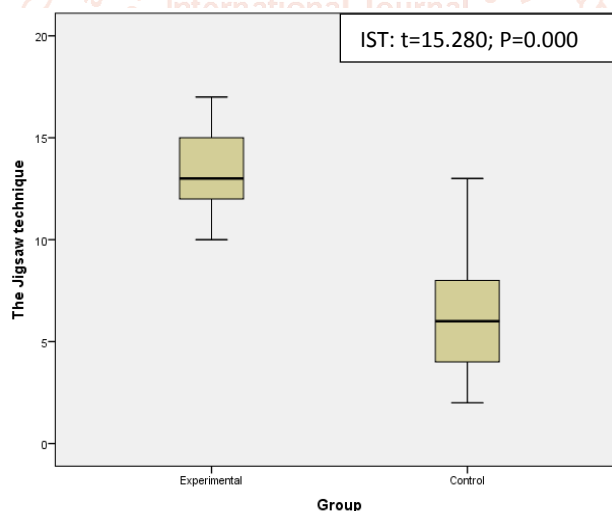


Figure 5: Comparing scores in Jigsaw Technique between experimental and control group

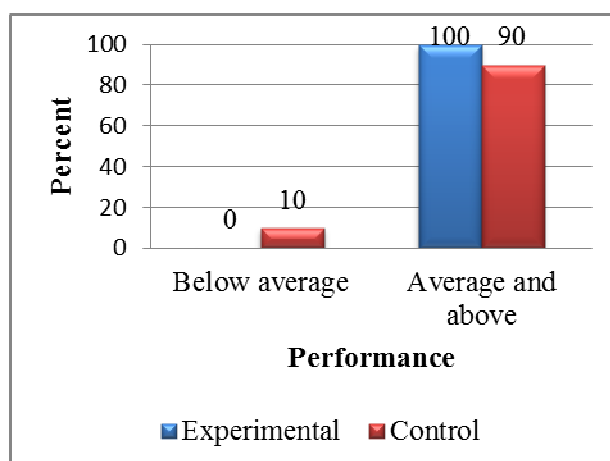
The average score in the experimental group was 13.48, significantly higher than the 6.30 obtained in the control group (IST: $P=0.000$). The hypothesis here stated is then rejected, thus implying that Jigsaw Technique significantly improves students' performance in History.

Research question three: How can Group Investigation Technique develop students' critical thinking skills in History?

As for Form Four students, in the experimental group, the average score was 14.00, higher than the 10.80 of the control group. As for Lower Sixth students, in the experimental group, the average score was 14.20, higher than the 12.00 of the control group. As for the overall score, the average was 14.10 for the experimental group, higher than the 11.40 of the control group (table 10).

Table 10: Description of students' scores with respect to Group Investigation Technique

Group	Class	N	Mean	SEM	SD
Experimental	Form 4	5	14.00	1.140	2.550
	Lower Sixth	5	14.20	.860	1.924
	Total	10	14.10	.674	2.132
Control	Form 4	5	10.80	.663	1.483
	Lower Sixth	5	12.00	.707	1.581
	Total	10	11.40	.499	1.578
Total	Form 4	10	12.40	.819	2.591
	Lower Sixth	10	13.10	.640	2.025
	Total	20	12.75	.512	2.291

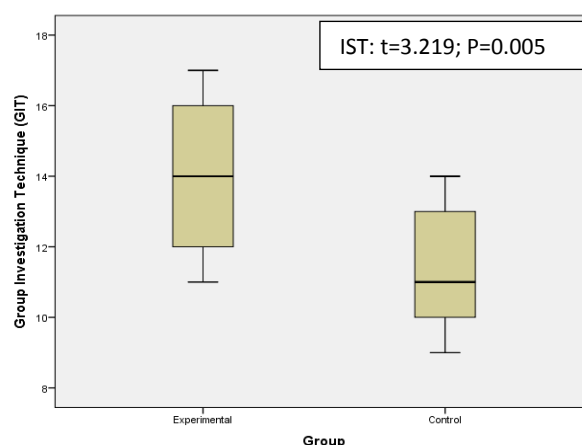
Cramer's V: $V=0.229$; $P=0.305$.**Figure 6: Comparing performance in Group Investigation Technique between control and experimental group**

Using average as cut point, it appeared that the experimental group did not significantly ($P=0.305$) performed better than the control group, with proportion of those that performed average or above of 100% (10) as against 90.0% (9) for the control group.

Research hypothesis three: The Group Investigation technique does not develop students' critical thinking skills in History

Table 11: Comparing scores of Group Investigation technique between experimental and control group

Group	N	Mean	Median	SEM	SD
Experimental	10	14.10	14.00	0.674	2.132
Control	10	11.40	11.00	0.499	1.578

IST: $t=3.219$; $P=0.005$ **Figure 7: Comparing scores of Group Investigation Technique between experimental and control group**

The average score in the experimental group was 14.10, significantly higher than the 11.40 obtained in the control group (IST: $P=0.005$). The hypothesis here stated is then rejected, thus implying that Group Investigation Technique significantly improves students' performance in History.

Discussion

Hypothesis One

Findings based on this hypothesis portrayed that the null hypothesis here is rejected and the alternative hypothesis is accepted, thus implying that the Student Team Achievement Division Technique significantly improves student performance in History.

Some of the respondent revealed that the Student Team Achievement Division Technique enhances their understanding of historical phenomenon better since they get different opinions or ideas about a particular topic.

These findings are in line with the views of Janke (1980) who maintains that receiving encouragement in a cooperative setting from both the instructor and peer helps to develop higher self. As a result of higher self-efficacy, student's grade may increase. Requiring students to verbalize their ideas to the group helps them to develop more clear concepts; thus the thought process becomes fully embedded in the students' memory.

Vygotsky supports this concept in his research of egocentric speech by claiming that verbalization plays a significant role in task solution (Bershon, 1992). Theories that support this view include Vygotsky (1978) who hypothesizes that the social interaction among students extends the students' zone of proximal development (the difference between a student's understanding and their potential to understand when students work in groups, the more knowledgeable students are able to help the less knowledgeable students understand new concepts. The process of verticalizing thoughts helps to further promote understanding of material.

Johnson, *et al.* (1998) theorized that cooperative effort lead to greater efforts to achieve including higher achievement by all students, long-term retention, intrinsic motivation more time spent on task development of higher order reasoning and critical thinking.

There is more potential for success when students work in group. Individual tends to group when they get stuck, where as a group of students is more likely to find a way to keep going (Johnson and Johnson 1990).

Piaget (1926) theorized that cognitive development occurs from social interaction and all contribute to learning and its results. Piaget (1926) claimed that an active discovery of learning environment should be

encouraged to provide students with opportunities for assimilation and accommodation. Piaget views teachers as facilitators of student learning, their role being to instruct and encourage students to do their work and to learn from working with performance.

Some Piagetians like Murray (1982) Damon (1984) and Wadsworth (1984) call for cooperative activities in schools because reciprocal interaction between learners on learning tasks brings more positive outcomes in students' learning achievement.

Research Hypothesis Two

Findings based on this hypothesis portrayed that the Jigsaw Technique significantly improves students' performance in History.

Some of the respondent revealed that the Jigsaw Technique eases understanding, it gives room for better explanation, facilitates the exposure to ideas from peers.

These findings are in line with the views of Aronson, Stephen and Snapp (1978) who held that students have to depend on one another to learn all their class material to enable each and every one in the class prepare for quiz or any form of assessment.

Others who support this view include Wood (1988) who hold the view that each group member has a distinctive material to learn and teach it to his or her group members. In the learning process, students help each other during class working on the same subsection, they get together to decide what is important and how to teach it. During this process, peer ideas are exposed to each other.

Neber *et al.* (2001) support the view that when students work in group it helps them to perform better. They held that cooperative learning in homogeneous groups with other gifted children is beneficial for gifted children's academic self-esteem.

Neber *et al.* (2001) held that cooperative learners have higher academic self-esteem compared with individual learners.

Neber *et al.* (2001) held that all the team members in a cooperative group provide information, explain and assist the other members. According to Slaving (1995), cooperative learning increases self-esteem and improves student achievement, inter-group relations, and acceptance of handicapped classmates.

Planitz (1996) also held that each individual team member is responsible for learning the material and also helping other members of the team learn students

work until each group member successfully understands and complete the assignment thus creating an atmosphere of achievement.

The findings of this study are further corroborated by these theories. Slavin (1996) believes that students cannot learn much from others if there is no social interaction in learning. Slavin further insists that without social interaction in learning, there are no cognitive conflicts, non-correlative arguments, or higher quality understanding. In the process of social interaction in learning, students can develop some necessary assistant learning skills as “a by-product of cooperative effort” Damon (1984).

Damon (1984) held that through mutual feedback and debate, peers motivate one another to abandon misconceptions and search for better solutions. Collaboration between peers can provide a forum for discovery learning and can encourage creative thinking. Damon (1984) therefore advocated social interaction among peers because peer interaction is essential when students work together.

Zakaria *et al.* (2010) held that if students are given the opportunity to explain or clarify ideas, their learning will be more successful.

Elaboration they said not only improves students learning when they are offered explanations but also enlarge their understanding when they give elaborated explanations to others (Mikeachie, 1999). It helps students to have more opportunity to access information and observe learning strategies used by others students (Singhanayok and Hooper, 1998).

Schunk (2007) following the social learning theorist was of the opinion that most learning takes place in asocial environment, in which learners obtain knowledge, rules, skills, strategies, beliefs and attitudes by observing others.

The Jigsaw technique improves students understanding and helps them to perform better (Zain *et al.*, 2009).

Research Hypothesis Three

Findings based on this hypothesis portrayed that the Group Investigation Technique significantly improves students' performance in History. Some of the respondent revealed that Group Investigation Technique eases learning and understanding and also helps to expose them to new ideas.

These findings are in line with the views of Kessier and Macleod (1995) who maintained that cooperative environment develops a social support system for students, other staff, and potential parents becomes integral part of the learning process, thus supplying multiple opportunities for support to enable them to

understand their lesson better and embrace new ideas from others.

Students play an active role in the learning process Johnson and Johnson (1989) and students' satisfaction with the Learning experience is enhanced.

Janker (1980) was of the opinion that students are inspired by instructors who take time to plan activities which promote and encouraging environment. This will help to develop student's higher self. As a result of higher self-efficacy, students' grade tends to increase.

Johnson and Johnson (1990) were also of the opinion that there is more potential for success when students work in groups. Individuals tend to give up when they get stuck whereas a group of students' are more likely to find a way to keep going.

Vygotsky (1978) held that working in groups improves students' performance because students who usually struggle in academic are able to learn to prepare for test, check and correct homework and see alternative solutions to problems. He hypothesizes that the social interaction among students extends the students zone of proximal development. When student work cooperatively in group, the more knowledgeable students are able to help, the less knowledgeable one understand new concept. Midkiff and Thomason (1993) held that when students learn in groups they embraced different learning styles such as kinaesthetic auditory and visual. When students work together they use kinaesthetic abilities by working with hands on –activities. Discussing issues within the group enhances verbal skills and class presentation of group findings reinforces visual and auditory skills.

Gilles and Advian (2003) also supported this view in that group learning promotes mutual liking, better communication, high acceptance and support, and also demonstrates an increase in a variety of thinking strategies among students in groups.

Slavin (2008) also support this opinion by accepting that Group Investigation Technique improves students' academic achievement because this technique is helpful to achieve personal learning goal by achieving group learning goal. If a member of a group wants to achieve his or her goal, she or he must help achieving the group's goal.

Sangad (2016) supported this view by propounding that Group Investigation Technique improves learning achievement of vocational school students' through motivation. Students will be motivated because they are helped by their teammates.

Harris and Hanky in Cohen (2004) supported this view by saying that Group Investigation Technique helps students' to think critically. It develops higher-level critical thinking skills in students, improves their ability in collecting, analyzing, and synthesizing information in order to solve a multi-task problem.

The findings of this study are in line with the theories of Vygotsky (1978) who propounded that individual learners first learn through individual to individual social interaction and then knowledge is individually internalized. He further said that social interaction needs to be encouraged in the process of learning to enable students to reach their academic goals or achievement. This theory emphasizes reciprocal interaction in learning; therefore, it makes the learning environment more natural and interactive (Beck and Chizhik, 2008).

Another theorist who supports this view is Piaget (1926) who argues that knowledge, values, regulations, morals and systems of symbols may only be learned effectively through interaction among participants. He further considers that cognitive development occurs from social interaction and all contribute to learning and its results. Piaget views teachers as facilitators of student learning, their role being to instruct and encourage students to do their work and to learn from working with others in order to improve their performance.

Some Piagetians like Murray (1984), Damon (1984) and Wadsworth (1984) theorized that reciprocal interaction between learners on learning tasks brings more positive outcomes in students' learning achievement.

General Conclusion

In Cameroon, students highly want to take an active role in the learning process as provided by cooperative learning strategies but the teachers on the other hand see it as delayance towards the completion of scheme of work at the required time frame. This is against the Law of Orientation for Basic, Secondary and Teacher Education; Law No 98/004 of April 14, 1998, refers to teachers as "guarantors" of quality education. Here quality education is referred to as the process in which both teachers and the students are allowed to carry out research in order to solve academic puzzles cooperative learning strategies are geared towards this goal.

Therefore, in Cameroon, and in the Buea Municipality in particular concerted efforts must be geared towards the application of cooperative learning strategies in the classroom in order to improve on the quality of education in our nation.

This study investigated how cooperative learning strategies improves students' critical thinking skills in History. As indicated earlier in this study, a review of the literature did not reveal any study on the use of cooperative learning strategies in the development of students' critical thinking skills in History conducted in secondary and high schools in the Buea Municipality. Therefore, this study fills this gap and makes an important contribution to knowledge by offering rich information on the use of cooperative learning strategies in secondary and high schools in the Buea Municipality.

The findings can be exploited by others for further research and in so doing expand our knowledge on these issues. For cooperative learning strategies, the findings may serve as some evidence to prompt and justify the development of individual accountability in group work. This will go a long way to help individual learners to search for information relating to their topic before joining team mates; hence, the development of a critical mindset in the search assembling and discussing their own findings.

It goes a long way to improve on learners' presentation skills and articulation of their findings to their classmates. This helps in improving quality engagement among team mates.

This study corroborates other work which emphasizes the importance of cooperative learning strategies in improving students' critical thinking skills in History. However, as demonstrated in this study and some earlier research, Lai (2011), Ennis (1985), Facione (1990), Sternberg (1986) and Halpern (1998) they are other complex mediating factors influencing such learning process.

When students are working towards a common goal, academic work becomes an activity valued by peers. Students are motivated to help one another to learn. Students are able to translate the teachers' language into student language for one another. Student who explain to one another strengthen their own learning.

When students need to organize their thoughts in order to explain them to teammates, they must engage in thinking that builds on other ideas (cognitive elaboration) which greatly enhances their own understanding.

Teammates can provide individual attention and assistance to one another.

Also regular and constructive collaborative study group can assist you with mastery of material, example preparation and better performance on test (Djaballah, 2013).

Major Recommendations of the Study

Below are some of the recommendations of the study.

The recommendations for research are presented in the section on suggestion for further studies.

1/ Allow students to find out information on their own. When students find out information on their own, they turn to understand it better than when they are being told by the teacher. John Dewey (1933) holds that for students to learn content intellectual, engagement is crucial. This will allow all students to do their own thinking, their own construction of knowledge.

Teachers should use questions, readings, and activities that will stimulate the mind of students.

2/ Assign students into groups and give them sub topics to work on. For short or simple tasks, often a pair is sufficient. Groups for a big project or an entire course will usually be larger. Smaller groups are more effective and easier to work with than large group.

Groups of three or five are ideal for formal cooperative groups.

Informal groups are best with two members.

Teachers should endeavor to use smaller groups to ease their work in class. Smaller groups are easier to manage than large groups.

3/ Form groups of students with mixed abilities and gender cooperative learning can be seen as a successful teaching strategy in which small groups each with students of different levels of ability, use a variety of learning activities to improve their understanding of a subject.

Students are mixed according to academic abilities, ethnic backgrounds, race, and gender. Teachers should not allow students to form their own groups based on friendship or cliques.

When groups are maximally heterogeneous, students tend to interact and achieve in ways and at levels that are rarely found in other instructional strategies. They also tend to become tolerant of diverse view of points, to consider others thoughts and feelings in depth and seek more support and clarification of others positions. Heterogeneous groups tend to learn better together (Wenzel, 2000).

4/ Encouraging teachers to use cooperative learning strategies in their classrooms. Teachers should use cooperative learning in their classrooms in that it will enable the students to achieve higher academic success than when they study alone. This is because each student is held responsible and accountable for

doing his or her own share of the work and for learning what has been targeted to be learned.

Teachers should make sure that in implementing cooperative learning in their classrooms, the five elements of cooperative learning must be taken in to consideration.

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